

**To: PMT design team**

**From: Randy**

**Subject: Internal PMT review – Part II**

All systems in the MicroBooNE project will undergo internally a technical review and a cost and schedule review as a part of preparing a baseline suitable for CD2 approval. For the PMTs in WBS 1.8, this review is broken into two parts: (1) a technical review of the PMT photo and electrical structure from ultraviolet light collection system through the cables bringing the signals to the in-cryostat patch panel including the holding packages for the PMTs and (2) a review of the rack holding the PMT holding packages, other cables and the interfaces to the cryostat. The latter review will also include a cost and schedule review for all of WBS 1.8. The first part of this review was held last July.

Attached is the charge to the review committee for the second review. That review will be held in the afternoon of Friday, January 21 2011, at Fermilab and by videoconference. In order to use the review time most efficiently, I would like you to prepare and make available to the review team at least one week prior to the review the following:

1. The present draft of the WBS 1.8 TDR.
2. A summary of the group's responses to the recommendations made in the July review, and a summary of the technical progress made since July highlighting any test/R&D which has led to changes (however small) to the design presented in July.
3. A brief description of the status of the technical items (rack, cabling, interfaces to the vessel) not reviewed in July.
4. A calendar timeline showing completion of the preliminary design (completion of all development), the start/finish of final design (generally consists of final drawings and setups for assembly-lines), and the start/finish of fabrication/production.
5. The actual manpower used and manpower/materials costs incurred for the work completed to date and the planned manpower needs during future calendar segments.
6. The total estimated costs (everything that is contained in the WBS), the expected budget and the funding sources for that budget. Show the actual costs incurred so far and the estimated cost to complete.
7. List the items and documents needed for CD2; state the status (complete, in progress, not started).
8. Brief initial answers to the various questions in the charge.

Prior to the review, I would hope that the review team would interact with you and ask for additional information. In turn, we would hope that you could supply that information as soon as possible.

**To: Review Committee**

**From: Randy**

**Re: Internal PMT review – Part II**

Last July, parts of the PMT system were reviewed. These parts included the light collection system, the mounting fixtures for the individual PMTs and the PMT bases. (The materials from that review can be found in the MicroBooNE DocDB under the link to that review.) I would like you to review the technical aspects of the PMT system in WBS 1.8 not included in the previous review. This includes the rack which holds the PMT mounts and its interfaces with the cryostat, the cables that connect the in-cryostat patch panel to the signal flange and the signal flange design. In this review, please also look over the cost and schedule for the entire WBS 1.8 system. In your report, please answer to the following questions:

1. Will the PMT support system meet the needs of the PMT detectors and integrate smoothly with other elements of the experiment?
2. Have the interfaces with the cryostat and with the electronics systems been agreed to with the other subsystems?
3. Are there assembly and insertion plans that are well thought out and minimize risk to the experiment?
4. Are the future manpower needs sufficient and identified? Are all manpower/materials costs identified in the BoEs and resource-loaded schedule?
5. EVMS as performed by the on-Project WBS (tracking of dollars) is not required for this system , but monthly progress reports and statusing of the tasks in the WBS remains. Are there sufficient milestones embedded among the tasks to allow for sufficient progress tracking on a month-to-month basis?
6. Does the subsystem have all of the necessary CD-2 documentation completed?

We would like you to discuss your conclusions with the WBS 1.8 group at the conclusion of the review and then send us a written report one week after the review. We appreciate your time and effort on this matter.